electric connection, form at least one heating element 50 to create a mass flow sensor and two temperature measurement elements 55a, 55b, one of which is preferably arranged at the left of the heating element and one at the right of the heating element.--.

REMARKS

Applicants have amended the Specification and claims 12-13. It is respectfully submitted that the amendments add no new matter and have proper support throughout the Specification.

Applicants have also added claims 14-18. It is respectfully submitted that these claims add no new matter, have proper support throughout the Specification, and are currently in allowable condition.

As such, claims 1-18 are currently pending in this application. Applicants respectfully traverse all objections and claim rejections for the following reasons.

I. DRAWING OBJECTIONS

The drawings were objected to for allegedly failing to show a heating element and at least one temperature measurement element as described in the Specification. Without agreeing with the merits of these objections, the drawings have been amended to clarify the subject matter illustrated therein. A separate letter entitled "Request for Entry of Drawing Corrections" is enclosed. It is respectfully submitted that the amendments do not add new subject matter and render the figures unobjectionable. Thus, it is kindly requested that the objection to the drawings be withdrawn.

II. REJECTION OF CLAIMS 12 AND 13 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 12 and 13 were rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Specifically, it is alleged that the recitation

of "an oxide layer being removed" in claim 12 and an alleged improper Markush grouping in claim 13 render these claims indefinite.

Without agreeing with the substantive merits of these rejections, Applicants have amended claims 12 and 13 to clarify the subject matter contained therein. It is respectfully submitted that newly amended claims 12 and 13 are not indefinite, and are currently in allowable condition. As such, it is kindly requested that the rejections of claims 12 and 13 under 35 U.S.C. § 112, second paragraph, be withdrawn.

III. REJECTION OF CLAIMS 1, 4-5, 7-11, AND 13 UNDER 35 U.S.C. § 102(b)

Claims 1, 4-5, 7-11, and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,393,351 to Kinard et al. (hereinafter "Kinard"). Respectfully, Applicants traverse.

Independent claim 1 recites the following, in pertinent parts:

> 1. A mass flow sensor, comprising:
> a frame . . .
> a metal layer . . . arranged above the frame;
> .
> .
> .
> **a moisture barrier arranged above the metal layer.**

As stated in the Specification, the stability of the membrane of a mass flow sensor may be improved, for example, by arranging a moisture barrier above the metal layer of the mass flow sensor, as recited in claim 1. (Specification, page 1, lines 12-14). In addition to providing improved stability, the moisture barrier is operable to reduce an amount of damaging moisture that may reach the membrane of the mass flow sensor. (Specification, page 1, lines 17-20). For this purpose, the moisture barrier may include, for example, a nitride layer produced by an LPCVD or PECVD process, or a silicon carbide layer produced by a PECVD process. (Specification, page 2, lines 1-5).

Kinard purportedly concerns inexpensive multi-junction thermal converters. (*See* Kinard, Abstract). In the embodiment described with reference to Figure 3 of Kinard, the multi-junction thermal converter 200 includes a silicon oxide layer 260 arranged above a dielectric substrate 202, a silicon nitride layer 262 arranged above the silicon oxide layer 260, and a heater element 206 and thermocouples 208, 210 provided above a silicon oxide layer 264. (*See* Kinard, col. 10, line 63 - col. 11, line 14). Additionally, Kinard states that protective silicon dioxide layers 266, 268 may also be provided.

To reject a claim under 35 U.S.C. § 102(b), each and every claim limitation must be identically disclosed in a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991).

Although Kinard states that protective silicon dioxide layers 266, 268 may be optionally provided, Kinard does not disclose or teach that these layers effectively prevent moisture penetration into the membrane. Thus, Kinard simply does not disclose "a moisture barrier arranged above [a] metal layer," as recited in claim 1.

For at least the foregoing reasons, it is kindly requested that the rejection of claim 1 under 35 U.S.C. § 102(b) be withdrawn. Moreover, since claims 4-5, 7-11, and 13 ultimately depend from claim 1, it is kindly requested that the rejections of these claims under 35 U.S.C. § 102(b) be withdrawn for at least the same reasons.

IV. REJECTION OF CLAIMS 2-3 AND 6 UNDER 35 U.S.C. § 103(a)

Claims 2-3 and 6 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kinard in view of U.S. Patent No. 5,852,239 to Sato et al. (hereinafter "Sato"). Respectfully, Applicants traverse.

Sato purportedly concerns a flow sensor for measuring a flow rate of a fluid based on a difference between voltages output by two temperature-sensitive heating portions. (*See* Sato, Abstract). In one embodiment, the flow sensor of Sato includes a square-shaped substrate with a hollow cavity extending along the

length of the substrate. (*See* Sato, col. 3, lines 45-50). A supporting portion is diagonally arranged within the cavity, thereby dividing the cavity into two side openings. (*See* Sato, col. 3, lines 50-54). Arranged on the supporting portion are three thin-film heating elements, which are formed by etching a silicon carbide film deposited on the square-shaped substrate. (*See* Sato, col. 4, lines 16-26). These three heating elements are configured to form a first and a second heating portions.

To establish a *prima facie* case of obviousness, the Examiner must satisfy three criteria: (1) there must be some suggestion or motivation to one of ordinary skill in the art to modify a reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or references when combined) must teach or suggest each and every limitation in the claim under examination. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

With respect to claim 2, neither Kinard nor Sato, whether considered individually or in combination, discloses a moisture barrier made of nitride, as recited in that claim -- Kinard discloses only a silicon dioxide layer, which is not alleged to prevent penetration of moisture, and Sato discloses no protective barrier whatsoever, much less "a moisture barrier" made of silicon nitride.

With respect to claim 6, neither Kinard nor Sato, whether considered individually or in combination, discloses a moisture barrier "formed at least in part by at least one of a top sandwich system and a bottom sandwich system," in which "at least one of the top sandwich system and the bottom sandwich system includes at least one silicon carbide layer," as recited in claim 6.

As regards Kinard, this reference does not disclose or teach the use of silicon carbide for any purpose whatsoever, much less for the purpose of providing a "moisture barrier."

As regards Sato, although this reference discusses the etching of a silicon carbide layer to form three heating elements, the reference fails to disclose the use of silicon carbide to form "a moisture barrier arranged above [a] metal

layer." Considering that the primary purpose of a moisture barrier, for example, a moisture barrier made of silicon carbide, is to prevent the penetration of moisture into the sensor membrane, etching the silicon carbide layer of Sato to produce the heating elements would presumably permit moisture to penetrate the substrate of Sato. That is, after the silicon carbide is etched away, moisture may penetrate the substrate of Sato in areas not occupied by the heating elements. As such, the etched silicon carbide of Sato cannot be considered a "moisture barrier" made of silicon carbide, as recited in claim 6.

As further regards claim 6, since neither Kinard nor Sato discusses the use of a silicon carbide moisture barrier, there is simply no motivation or suggestion to modify Kinard with the silicon carbide layer of Sato in the manner contemplated by claim 6, i.e., there is no motivation or suggestion to modify Kinard with a silicon carbide moisture barrier.

For at least the foregoing reasons, it is kindly requested that the rejections of claims 2 and 6 under 35 U.S.C. § 103(a) be withdrawn. Furthermore, since claim 3 depends from claim 2, it is kindly requested that the rejection of this claim under 35 U.S.C. § 103(a) be withdrawn for at least the same reasons.

V. CONCLUSION

In light of the foregoing, Applicants respectfully submit that claims 1-18 are currently in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

KENYON & KENYON

Dated: 8/14, 2002

By: [signature]
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PATENT & TRADEMARK OFFICE

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 12 and 13 have been amended as follows:

12. (Amended) The mass flow sensor according to claim 9, further comprising [wherein]:

an oxide layer arranged in the membrane and below the metal layer; and

a recess arranged beneath the nitride layer;

wherein the recess does not contain the oxide layer [an oxide layer is removed in a recess area beneath the nitride layer].

13. (Amended) The mass flow sensor according to claim 3, wherein:

the nitride layer is formed by an operation selected from the group consisting of [one of] a PECVD operation, a LPCVD operation, and [another] a CVD operation.

IN THE SPECIFICATION:

The paragraph beginning on page 4, line 29, of the Specification has been replaced with the following new paragraph:

--Electrically insulated structures [(not shown)] are produced in platinum layer 10 by etching in a known way. The structures, each of which is provided with two terminals (not shown) to establish an electric connection, form at least one heating element 50 [(not shown)] to create a mass flow sensor and two temperature measurement elements 55a, 55b [(not shown)], one of which is preferably arranged at the left of the heating element and one at the right of the heating element.--.